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of Transportation
Federal Aviation Administration

General Aviation Airworthiness Alerts

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JUNE 1997

Improve Reliability-Interchange Service Experience

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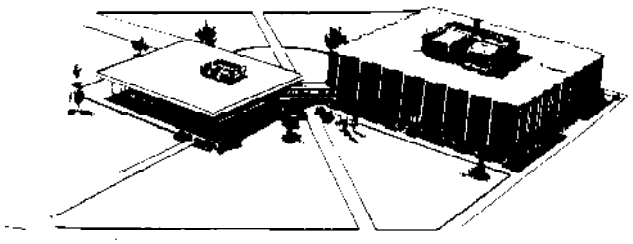
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, DC 20590

GENERAL AVIATION AIRWORTHINESS ALERTS



FLIGHT STANDARDS SERVICE
Mike Monroney Aeronautical Center

The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported as significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts' readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: FAA;
ATTN: Maintenance Support (AFS-640);
P.O. Box 25082; Oklahoma City, OK 73125-5029.

NOTICE

AIRCRAFT OXYGEN SYSTEMS

The crash of a Cessna, Model 337 is currently under investigation by the Federal Aviation Administration (FAA) and the National Transportation Safety Board (NTSB).

It appears the crew was incapacitated by hypoxia while operating at Flight Level 230.

The aircraft oxygen system was apparently serviced from an oxygen cart with "yellow" cylinders.

Industry standards dictate that "yellow" cylinders contain compressed air and that "green" cylinders contain oxygen. The invoices confirmed that the supplier delivered compressed air to the company. The supplier stated that the compressed air was not for human consumption.

Owners and operators should ensure that aircraft oxygen systems are serviced only with aviation oxygen. AC 43.13-1A, Acceptable Methods, Techniques, and Practices Aircraft Inspection and Repair, paragraph 363, provides the following additional servicing information:

> **CAUTION: Use only aviation breathing oxygen when having the oxygen bottle charged. MIL-O-27210C specifies** that the moisture content of aviation breathing oxygen must not exceed 0.005 milligrams of water vapor per liter of gas at a temperature of 70 degrees Fahrenheit and a pressure of 760 millimeters of mercury.

AIRPLANES

AEROSPATIALE

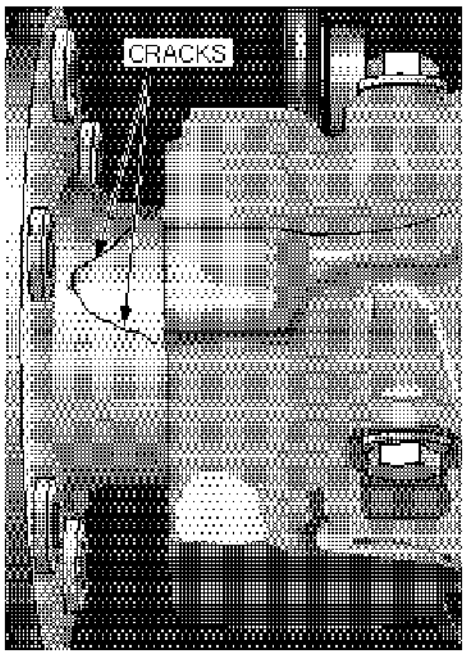
Aerospatiale
Model TB 9
Tampico
Engine Textron Lycoming
Model O-320-D2A

Engine Crankshaft
Cracks
8510

This aircraft was used exclusively for flight training. During a preflight inspection, the student pilot found engine oil residue on the cowling.

Further inspection by maintenance personnel revealed the crankshaft was cracked in two places. The cracks converged at the radius of the crankshaft and the propeller flange. (Refer to the following illustration.) The maintenance record indicates a history of a propeller strike and sudden stoppage. The submitter speculated that when the sudden stoppage incident occurred, this defect had not been detected.

Part total time-1,809 hours.



Aerospatiale
Model TB 10
Tobago

Cabin Interior
Corrosion
2500

During a scheduled inspection, several of the aircraft interior aluminum trim panels were found corroded.

All of the aluminum trim panels were corroded where they contacted a steel part, (e.g., screws and bolts). Corrosion was also present where adjacent aluminum structures contacted the trim panels. The submitter speculated the fabric (that was attached to the trim panels) had been "fireproofed" with a "salt brine solution" (or some other agent) which produced the corrosion.

Part total time-898 hours.

AMERICAN GENERAL

American General
Model AA5B
Tiger

Defective Elevator
Attachment Hardware
5520

While accomplishing a repair on the horizontal stabilizer, several nutplates were found to be defective.

The nutplates (P/N MS21069-4) were used to attach the elevator hinge brackets (four) to the horizontal stabilizer spar. The nutplates were cracked through the threaded area. A fastener was installed in one of the "uncracked" nutplates for a test, and it cracked when standard torque was applied. The location of these nutplates makes them inaccessible during scheduled inspections. A one-time inspection of these nutplates is a good idea; however, this area should be checked at every opportunity.

Failure of these nutplates could result in separation of the elevator from the aircraft during flight.

Part total time-3,388 hours.

BEECH

Beech Model S35 Bonanza — **Wing Flap Failure 2750**

The pilot reported that during a landing approach, the wing flaps failed to extend.

An inspection of the system revealed the left wing autopilot followup (P/N 2111031001) had seized in the aft position. This caused the actuator wire to move over the flap microswitch and prevented the flaps from extending. The submitter stated this defect was cured by lubricating the autopilot followup shaft. It is amazing what proper lubrication and maintenance will do!

Part total time not reported.

Beech Model V35A Bonanza — **Alternator Failure 2434**

The pilot reported the alternator was inoperative and asked the maintenance technicians for assistance.

An investigation disclosed the alternator ear retaining nut came loose from the armature shaft. The armature shaft was worn at each of the bearing points. The submitter speculated that vibration and rotation of the armature shaft caused the cotter pin to shear and the retaining nut to loosen.

Part total time since overhaul was 130 hours.

Beech Model A36 Bonanza — **Defective Oil Filter Adapter 8550**

During a scheduled engine inspection, the oil filter was removed. A "plug," which had been installed in the oil filter adapter, was found dislodged.

The "plug" had originally been "press fitted" into an unused oil passage in the oil filter adapter (P/N 653491). The dislodged "plug" allowed the oil filter to be bypassed, and unfiltered oil was supplied to the engine. The engine was a Teledyne Continental, Model IO-550B. The submitter stated this was "a factory rebuilt engine." Engines with this type of oil filter should be inspected to confirm the security of the "plug."

Part total time-239 hours.

Beech Model 58 Baron — **Cabin Heater Malfunction 2140**

The pilot reported the cabin heater did not operate properly and produced fumes.

The Janitrol, Model B4050 heater system was thoroughly inspected. After much troubleshooting, the problem was found to be the combustion air fan (P/N 75D80). The air fan was "running backwards" and pulling air from the combustion can. The submitter did not offer a cause for this problem.

Part total time-163 hours.

Beech Model B58 Baron — **Alternator Failure 2434**

The pilot stated that during flight, the Number 2 amp meter indication began to fluctuate and then went to "zero." At the same time a "rumbling" noise was heard, which lasted only a few seconds. There were no other abnormal indications. An uneventful (precautionary) landing was made, and maintenance personnel were summoned. The engine installed in this aircraft was a Teledyne Continental, Model IO-520C.

When the Number 2 engine cowling was opened, small pieces of copper and aluminum were observed throughout the engine bay. When the alternator was removed, the shaft was found to have no support and "wobbled" freely. The alternator gear (P/N 640932), as well as the drive gear (P/N 632018) from the crankshaft, had been "chewed up." A lock plate (P/N 641909) and the two bolts (P/N 64080) used to retain the plate were missing. The engine oil filter was removed and cut open to reveal a large amount of metal

contamination. The submitter recommended the alternator gear and shaft be inspected at every opportunity.

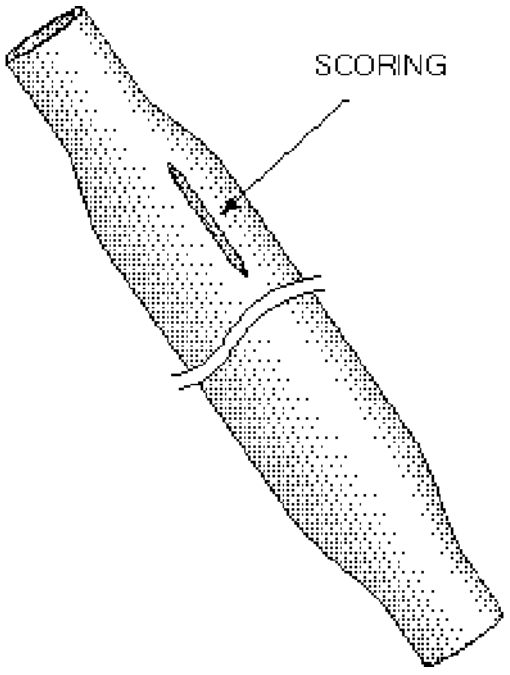
Part total time-552 hours.

Beech Model 58 Baron — **Rudder Linkage Damage 2721**

During an annual inspection, the rudder pedal bellcrank interconnect tube (P/N 002-410034-1) was found damaged.

The tube had been worn completely through its wall thickness (in a longitudinal direction) by a "PK" screw. The damaged area was approximately 1 inch long. (Refer to the following illustration.) The upholstery type "PK" screw was used to secure the "kick plate" to the floor board. The submitter warned that using "PK" screws longer than .75 inch may cause interference with the rudder or other flight control linkage.

Part total time-265 hours.



Beech Model B90 King Air — **Defective Ammeter Shunt 2437**

During a scheduled inspection, the mounting base of the ammeter shunt was found broken.

The mounting base broke at the two mounting screws, and the ammeter shunt (P/N MS91587-2) was allowed to move freely. The base of the mount was hollow and exposed the mount screws (which hold the terminal blocks to the base). The mount screws contacted the base mounting screws and caused electrical arcing to ground. When a new ammeter shunt was received, the base was solid (making it stronger), and there were no exposed screws on the bottom. The manufacturer's part number was the same for both units.

Part total time not reported.

Beech Model B200 King Air — **Fuel Pump Failure 7314**

The pilot reported that during flight, the left engine "flamed out." A successful single-engine landing was made, and the aircraft was delivered to maintenance technicians.

An investigation disclosed the following:

1. The engine fuel pump (P/N 025323300-03) seized;
2. This caused the spline, on the pump shaft and drive coupling, to be "ground off;" and
3. This allowed the drive coupling to "spin freely" on the seized shaft of the pump.

The high number of operating hours could have been a contributing factor. During frequent inspections, the condition of the fuel pump should be closely inspected.

Part total time-6,295 hours. Part time since overhaul-3,459 hours.

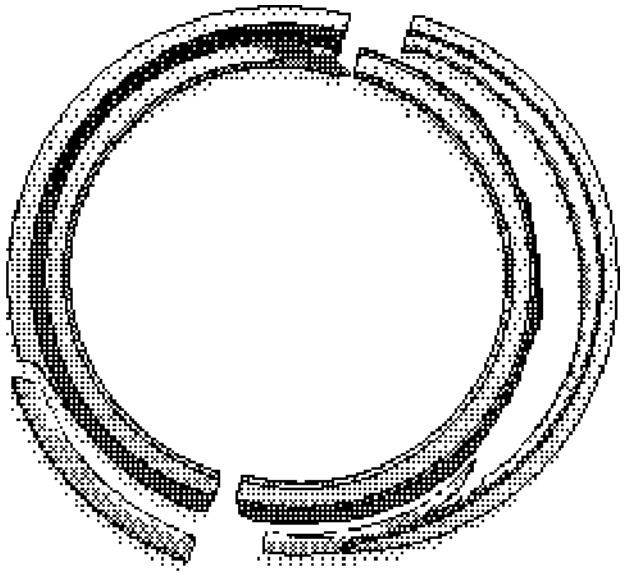
Beech
Model 1900D
Airliner

Propeller Blade
Bearing Failure
6111

The left engine propeller was found to be "slinging" grease, and the blades appeared to be "loose." The propeller was a Hartzell, Model HC-E4A-3.

When the propeller was removed and disassembled, the blade bearing race (P/N A2202) was found broken. The bearing race split around approximately half of its diameter, and another (smaller section) broke from the other half. (Refer to the following illustration.) This situation caused a very hazardous condition which could have resulted in a catastrophic failure and an aircraft accident.

Part total time-6,635 hours. Time since overhaul-2,552 hours.



Beech
Model 2000
Starship

Fuel Line Chafing
2820

During a routine inspection, a stainless steel fuel line (P/N 3035737) was found chafed. This line runs from the fuel flow transducer to the flow divider. The chafed area was located at the apex of the first bend from the fuel flow divider and had contacted the engine power lever bracket (P/N 122-940028-1). The submitter inspected two other aircraft, finding the same defect at four of the six locations inspected (three aircraft total). It was suggested that all operators of "like aircraft" conduct a one-time inspection for this defect during the next scheduled inspection. The submitter stated the power lever bracket can, in most cases, be "dressed and radiused" to provide proper clearance. Also, the line may be repositioned and chaff protection installed. The submitter has made the aircraft manufacturer aware of this problem.

Part total time-1,194 hours.

CESSNA

Cessna
Model 140

Wing Lift Strut
Corrosion
5740

While removing the wing lift struts and vertical braces for repainting, corrosion was found on both wing struts.

The corrosion was located under and adjacent to the brace clamp, at the junction of the vertical braces and the lift struts. The strut material was pitted around the circumference of the strut; however the pitting damage was not excessive. The submitter suggested that damage would have progressed and could have led to a serious compromise of the structural integrity of the lift strut. The pitting was along a straight line around the struts which reduced the tubing wall thickness. Previously, chafe protection (in the form of "non-hydroscopic tape") had been installed under the vertical brace clamp. An in-flight lift strut failure will result in a "wing fold" and a catastrophic accident.

Part total time not reported.

Cessna Model 172 Skyhawk — **Defective Rudder Attachment 5540**

During an annual inspection, the lower rudder attachment was found loose.

The lower rudder attachment bracket rivets were loose and "working." This bracket is used to accommodate the rudder attachment bolt, and failure could result in structural damage or loss of the rudder. The submitter had inspected three "like aircraft" within the past 4 months. This area should be closely inspected at every opportunity.

Part total time-4,250 hours.

Cessna Model 182G Skylane — **Landing Gear Corrosion 3213**

During an annual inspection, corrosion was noticed on both main landing gear legs (P/N's 0741601-1 and 0741601-2).

The corrosion appeared to be concentrated at the lower forward corner of the cabin entry step. Severe corrosion was found under the step after it was removed. The metal under the step had begun to delaminate. The severity of the corrosion required that both landing gear legs be replaced. The submitter speculated the corrosion was caused by "glue" which was used to aid in attaching the step to the landing gear. It was recommended that all owners, operators, and maintenance technicians inspect for this condition. If corrosion evidence is found adjacent to the entry step, the step should be removed.

Part total time not reported.

Cessna Model T207A Turbo Stationair — **Alternate Air Door Failure 7160**

The pilot reported losing manifold pressure immediately after takeoff. A safe landing was made at the departure airport, and maintenance personnel were summoned.

An inspection revealed the alternate air door hinge pin (P/N 1250839-20) was missing. The door had fallen into the engine induction system, and the airflow was restricted. The missing hinge pin was not recovered. The pin may have broken due to wear or migrated out of position. During preflight inspections, the alternate air door assembly should be checked for security and proper hinge pin installation.

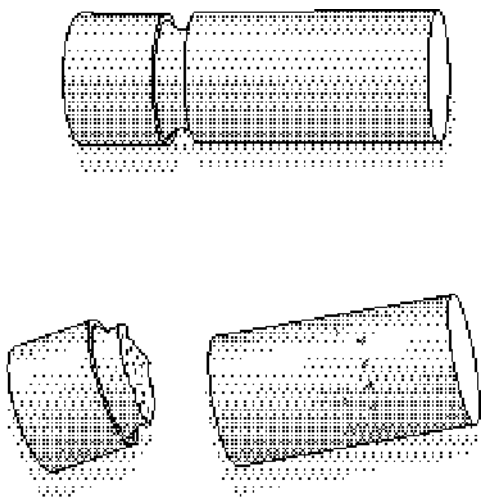
Part total time-9,400 hours.

Cessna Model T210 Centurion — **Nose Landing Gear Failure 3230**

During a landing approach, the nose landing gear could not be extended to the "down and locked" position. All attempts to lower the nose gear failed, and a "nose gear up" landing was made.

The aircraft was taken to a hangar and placed on jacks for a test of the system. The landing gear cycled normally through 20 cycles with no apparent problems. The nose gear actuator was removed and sent to the manufacturer for further testing. The manufacturer reported that both of the down lock pins (P/N 9882020-1) in the nose gear actuator bearing end were broken. The pins failed where they were retained by a roll pin. (Refer to the following illustration.) With the actuator lock pins broken, the actuator could not engage the down lock hooks onto the pins. The jamnut on the actuator shaft would not pass to allow the actuator to fully retract. Cessna has issued Service Bulletin (SEB) 95-20 which covers this subject and provides inspection criteria. Owners, operators, and maintenance technicians are urged to comply with this SEB at the earliest opportunity.

Part total time-1,993 hours.



Cessna **Alternator Failure**
Model T210M **2434**
Centurion

The aircraft was delivered to maintenance with a report that the alternator was inoperative.

An investigation disclosed the alternator adjustment bracket retaining bolt had failed, the alternator moved enough to cause the electrical terminal to contact a ground, and a direct short was produced.

Part total time not reported.

Cessna **In-Flight Engine**
Model 310Q **Failure**
2822

The pilot reported the right engine fuel pump failed, and the boost pump would not sustain engine operation. An uneventful landing was made.

During an investigation the engine driven fuel pump shaft was found "sheared." The fuel boost pumps would "prime" the engine allowing it to run; however, the pumps would not operate in either the "high" or "low" positions. Further inspection revealed the oil pressure switches, located in the nacelle, were dirty and would not allow the boost pumps to run. The aircraft was in compliance with Cessna Bulletin MEB 883 (which deals with this subject). An inspection of another "like aircraft" disclosed the same defect. It was suggested that a preflight check for this condition be accomplished. The check should be accomplished with the engine idling and momentarily selecting the boost pump to the "high" position. An increase in fuel flow and a slight decrease in RPM should be observed. Also, periodic cleaning and adjustment of the oil pressure switches was recommended.

Part total time-1,230 hours.

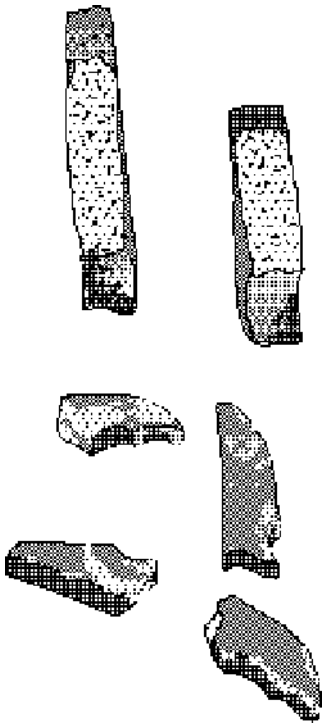
Cessna **Nose Landing Gear**
Model 320F **Failure**
Skynight **3230**

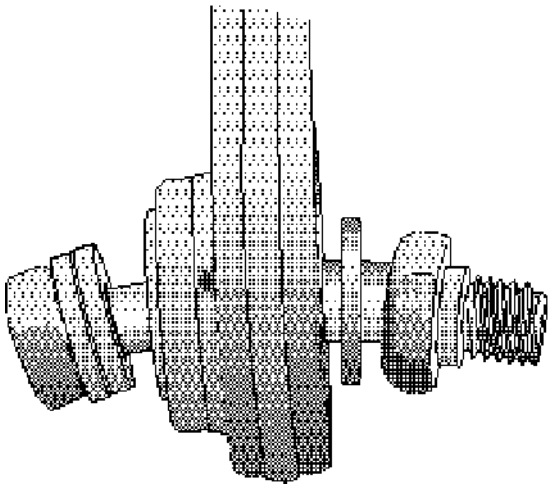
When the landing gear was selected to the "up" position after takeoff, the nose gear failed to retract and would not extend.

An investigation disclosed that the nose gear bellcrank (P/N 0842102-2) had broken during the attempted retraction cycle. According to the aircraft maintenance records the nose gear failed in the same manner approximately 9 years ago. The bellcrank was broken at the point where it attaches to the main drive tube. (Refer to the following illustrations.) An inspection of the broken bellcrank parts indicated it failed "instantaneously," the attachment bolt was pulled through the mounting hole in the bellcrank, and the attachment bolt was severely bent.

The FAA Service Difficulty Program data base contains 61 other reported failures of this part. The submitter speculated the part may not be structurally adequate for long term service. This report and supporting data has been forwarded to the responsible FAA aircraft certification office for appropriate action. A Safety Recommendation will be initiated.

Part total time-665 hours.





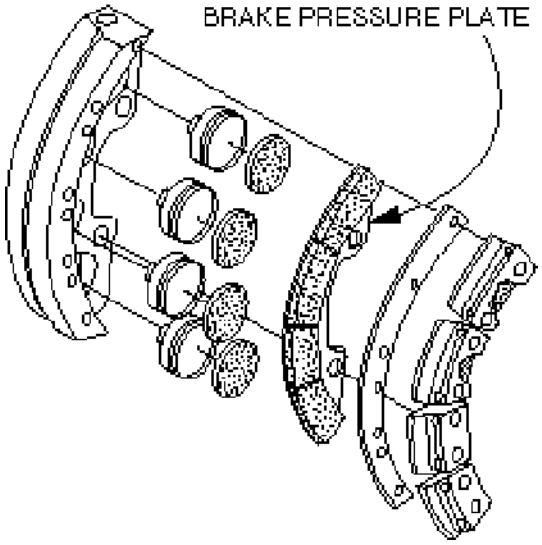
Cessna Model 208B Caravan

Improper Wheel Brake Installation 3242

During an inspection, the right main landing gear wheel brake pressure plate (P/N 073-08500) was discovered to be improperly installed. This caused the brake lining to face the piston housing instead of the pressure plate which allowed "metal to metal" contact when brake pressure was applied. There was evidence that extremely high temperatures had been produced by braking action. The pressure plate and the linings were damaged beyond acceptable limits and were replaced. (Refer to the following illustration.)

An investigation revealed the pressure plate had been installed improperly during replacement of the brake linings. The brake linings had been changed, in conjunction with a phase inspection, 9 days prior to the discovery. The submitter stated that mechanics should be aware that the pressure plate can be installed backwards, and the proper technical data should always be consulted.

Aircraft total time-525 hours. Part total time not reported.



Cessna Model 208B Caravan

Main Landing Gear Wheel Bolt Failure 3246

An operator reported finding repeated main landing gear wheel bolt failures during inspections.

The bolt failures seemed to occur at approximately 150 hours of time in service. This operator was using a tire pressure of 53-57 PSI in accordance with Cessna Phase Check Task Card Number 321004. Chapter 12 of the maintenance manual shows a table with the required tire pressure for different tire manufacturers and tire models. The recommended pressure for the tires used in this case is 35-45 PSI. After adjusting the tire pressure in accordance with the maintenance manual, the bolt failure problem was cured. Maintenance personnel should be aware of and use the proper tire pressures as required in the maintenance manual.

Part total time not reported.

ERCOUPE

Ercoupe **Rudder Spar Defects**
Model 415E **5541**

While preparing a new rudder spar for installation, several cracks were found.

The rudder spar (P/N 415-23004) had been recently acquired from the manufacturer. (The submitter did not give the location of the cracks.)

The spar was returned to the manufacturer, the manufacturer replaced the spar with a new (identical) part; however, the new part was also cracked. A total of three new spars were ordered before a spar "in serviceable condition" was delivered. Evidently, the spar comes from the manufacturer predrilled; therefore, it was necessary to send the good spar back and request a "blank" in order to obtain acceptable edge distance for the attachment holes.

It is recommended that all "new" parts be thoroughly inspected prior to installation.

Part total time-"0" hours.

PIPER

Piper **Brake Fluid Loss**
Model PA 28-140 Cherokee **3243**

A persistent problem was found to affect 2 of a fleet of 15 aircraft. The brake system reservoir was found empty during preflight inspection (approximately every six flights).

The cause of this defect was found to be with the handbrake actuating cylinder (P/N 63353-00). It was found that the snapring (P/N 755 950) had dislodged. This allowed the shaft and inner piston to exit the cylinder each time the handbrake handle was pushed forward. All of the brake system reservoir would exit through the actuator end and was directed down the control column opening in the console. When the handle was released, the cylinder return spring would "reassemble" the mechanism and the system would once again hold fluid. The submitter suggested all operators of "like aircraft" conduct a one-time inspection of the handbrake actuator cylinder for proper snapring installation.

Part total time-3,900 hours.

Piper **Wing Spar Corrosion**
Model PA 28-140 Cherokee **5711**

Severe corrosion was found when the wing fuel tank flexible hoses were being changed.

The corrosion was mainly concentrated in the area where the flexible fuel hoses pass through the wing spars (P/N's 62074-00 and 62074-01). Corrosion was also found on the top and bottom of the right wing spar structure. In the opinion of the submitter, the severity of the corrosion damage compromised the structural integrity of the wing structure. Owners and operators of older aircraft are strongly urged to have this area thoroughly inspected at the earliest

opportunity. It would be a good time to change the flexible fuel hoses which may have been neglected.

Part total time-2,983 hours.

Piper
Model PA 28-161
Warrior

Wheel Bearing Corrosion
3246

During a routine brake change, the left main landing gear wheel bearings were found "frozen" on the axle.

When the assembly was freed from the axle, the wheel was filled with corrosion residue. Also, the axle shaft had some minor pitting.

If proper lubrication and preventive maintenance procedures had been used, this damage might not have occurred.

Part total time not reported.

Piper
Model PA 28-161
Warrior

Engine Power Loss
7160

The aircraft was delivered to maintenance with a report of "engine power loss."

While troubleshooting this problem, the induction air box (P/N 37328-802) was found cracked in several places. Two of the carburetor heat flapper valve pivot grommets were missing. Both of the "scat" hose attachment flanges were loose. The combination of these three defects allowed carburetor heat to be supplied to the engine induction system at all times. The additional heat supplied to the carburetor was determined to be the cause of "engine power loss."

Part total time not reported.

Piper
Model PA 31T
Cheyenne

Cabin Entry Door Defects
5210

During a maintenance preflight inspection, the cabin entry door did not function properly. Further inspection revealed the outer door skin was cracked.

The door skin crack was approximately 2.5 inches long. The crack originated from the end of the forward side of the door hinge and extended upward. The door was disassembled, and a bracket (P/N 46624-03) and two bulkheads (P/N's 46550-02 and 46550-04) were found cracked. The door skin was repaired, and it was necessary to replace the other three parts. The submitter speculated "the bracket is structurally inferior for its application." An examination of another "like aircraft" disclosed similar defects.

Part total time-3,952 hours.

Piper
Model PA 31-350
Chieftain

Propeller Fastener Failure
6114

The pilot reported that when engine power was reduced for landing, the left engine began to vibrate.

After an extensive investigation, three of the six mounting studs on the propeller were found fractured. The propeller was removed and the "O-ring" was found pinched between the propeller hub and the engine starter ring gear. The "O-ring" should have been installed inside the propeller flange. The submitter speculated that as the "O-ring" extruded, the torque applied to the propeller retention studs was reduced. This allowed the propeller to "work and move" and caused the propeller retention studs to fail. Further inspection revealed the engine starter ring gear was cracked, and the propeller hub was cracked at one of the mounting stud holes.

Part total time-256 hours.

Piper **Rudder Skin Cracks**
Model PA 32-RT300T **5540**
Turbo Lance

During an annual inspection, several cracks were found in the rudder skin.

The cracks were located on the left side of the rudder adjacent to the trailing edge of the skin and approximately 18 inches down from the top. The cracks radiated from the aft end of a stiffening dimple in a "spider web" pattern. There were six cracks which were approximately 1 inch in length. This aircraft was in compliance with Piper Service Letter 882A (which deals with this subject). Allowed to progress, this condition could have produced a compromise of the structural integrity of the rudder and impaired safety of operation.

Part total time-1,600 hours.

Piper **Nose Landing Gear**
Model PA 34-200 **Failure**
Seneca **3251**

The pilot stated that when the landing gear was retracted after takeoff the nose landing gear "unsafe" light remained illuminated. The landing gear was extended; however, during landing the nose gear collapsed during rollout.

There was an investigation, and the ground handling personnel were interviewed. The interview revealed that the nose gear turn limits had been exceeded while towing the aircraft. The nose gear strut upper tiller roller (P/N 78535-00) had been displaced outside of the steering track channel (P/N 95394-00). With this condition, the pilot was able to taxi and takeoff without noticing any abnormality until the landing gear was retracted.

Part total time not reported.

Piper **Nose Landing Gear**
Model PA 44-180 **Failure**
Seminole **3230**

The pilot reported that when the landing gear handle was placed in the "down" position the nose landing gear "unsafe" light remained illuminated. All attempts to extend the nose gear failed and necessitated a landing without the aid of the nose gear.

After landing, the nose landing gear door linkage "fell out" when the aircraft nose was raised. An investigation disclosed the nose gear followup rod failed and caused the nose gear to jam in the wheel well. The cause of the followup rod failure was not reported.

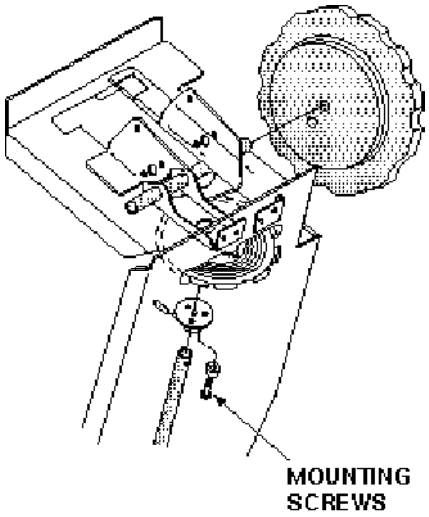
Part total time-5,000 hours.

Piper **Rudder Trim System**
Model PA 46-350P **Failure**
Malibu Mirage **2721**

The pilot reported losing control of the rudder trim system during flight.

An inspection revealed that the three mounting screws, used to hold the rudder trim control wheel to the sprocket, had loosened and fallen to the floor. This allowed the rudder trim wheel to spin freely without producing a corresponding movement of the rudder trim tab. (Refer to the following illustration.) The submitter stated: "The manufacturer should issue a service bulletin allowing these screws to be replaced with machine screws and possibly a safety device to keep them in place."

Part total time-308 hours.



TWIN COMMANDER

Twin Commander Model 690B

Nose Landing Gear Failure 3230

During a landing approach, the nose landing gear could not be extended to the "down and locked" position. All attempts to lower the nose gear failed, and a "nose gear up" landing was made.

An inspection revealed the nose landing gear lower strut snapring failed to retain the strut. This failure allowed the strut to extend while it was still in the wheel well and caused the nose gear to bind. The snapring and lower strut groove were not damaged. The submitter speculated that during a previous assembly, the snapring had not been properly installed. The number of flying hours since the last assembly was not reported.

Part total time-4,422 hours.

HELICOPTERS

AMERICAN EUROCOPTER

American Eurocopter Model BO-105S

Balancing System Magnetic Pick Up Missing 6320

The submitter stated that they had purchased an "exchange" Main Rotor Transmission from American Eurocopter. The unit was received with historical record cards, a serviceable tag, and a "JAA Form One" certificate. After installation, ground maintenance runs, preparation for main rotor system tracking, and balance checks, it was discovered that the transmission had been assembled without the installation of the balancing system magnetic pickup target interrupter (P/N 105-41901.19). This is not a hazardous situation, and with American Eurocopter Technical Representative assistance, this situation will be corrected as soon as the parts are available. This situation "points out" why it is important to "check out" any replacement installation.

Part time since overhaul-"0" hours.

American Eurocopter Model AS-350B2 Ecureuil

Main Rotor RPM Warning Horn Inoperative 6340

The submitter stated that there are two types of warning horns, one manufactured by Klaxon the other by Voxbeel. The submitter also stated both horns are failing due to poor workmanship.

The reasons for these failures are poor soldering points and rivets which are not fully squeezed. These two problems disallow the horns to activate when the rotor RPM falls below minimums. The submitter has ordered four horns in the past 60-day period.

Part total time not reported.

BELL

Bell Model 222U

Engine Fuel Control Line Cracked 7310

The Number 2 engine air line (P/N 4-181-840-01) to the fuel control unit was cracked and caused the engine to decelerate to flight idle. A call was made by the submitter of this Malfunction Or Defect Report (M or D) to the manufacturer of the engine (Lycoming). This problem had occurred on eight other engines in the past. The submitter stated that a one-time inspection of their one spare engine and engines on three different Bell 222 helicopters all had these cracked lines which were fretting under the ferrule.

A review of the Service Difficulty Reporting (SDR) data base revealed no past history of the problem. If the other eight failures had been reported, an article could have been written sooner, and defects may have been found before the failures.

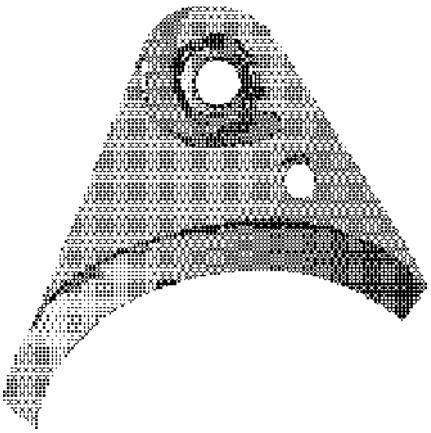
Part total time not reported.

BELL/GARLICK

Bell/Garlick Model UH-1B Huey — **Pitch Link Bushing Recessed 6420**

The bushing for the pitch link does not fit flush on the back side of the grip ear. This causes the single steel washer (under the nut of the pitch control link bolt) to be unsupported over the recess; therefore, it can bend and allow the bolt to lose torque. (Refer to the following illustration.) The pitch control came in contact with the grip ear as the loose bolt was able to move. The submitter stated that he had seen this problem several times in the past. The submitter has submitted several Malfunction Or Defect Reports on this problem and has also contacted the manufacturer, but has had "no results." The submitter suggested that either double stainless washers should be used or a bushing of the correct length should be manufactured.

Part total time-1,143 hours.



HILLER

Hiller Model H-23B — **Excessive Wear Of The Intermediate Shaft Lower Gear 5610**

While performing hover track and balance of the main rotor blade assembly, a loud bang was heard and the rotor RPM started to decay. A hovering autorotation was successfully accomplished. A maintenance inspection was performed, and it was discovered there was excessive wear (of .030 inches) on the intermediate shaft lower gear teeth. This shaft had sheared, causing the engine and rotor drive train to disengage. The mating gear, located inside the Mercury Clutch Housing, had approximately .037 inches of wear.

Part time since overhaul-262 hours.

McDONNELL DOUGLAS

McDonnell Douglas Model MD-500C — **Tail Rotor Pitch Change Link Failed 6720**

The tail rotor pitch change links were installed at 13,000 aircraft hours. At 13,432 aircraft hours, one pitch change link failed at one end. The submitter stated the bearing appeared to have been "excessively over roll staked" during installation into the link bearing housing. Failure of the link assembly caused loss of tail rotor control of the aircraft. The pilot initiated a landing without further damage to the aircraft. The submitter recommended that a mandatory NDI inspection be performed after a bearing is installed in these links.

Part time since overhaul-132 hours.

AGRICULTURAL AIRCRAFT

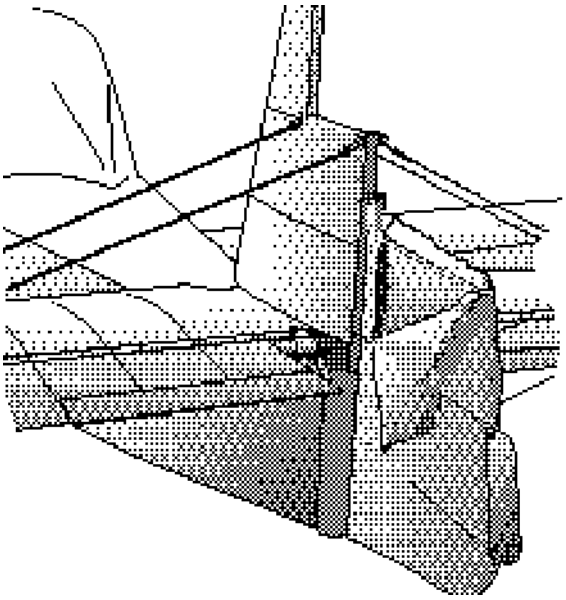
AYRES

Ayres **Rudder Hinge Failure**
Model S-2R **5540**
Bull Thrush

During flight, the upper half of the rudder separated from the aircraft. An uneventful emergency landing was made on a major highway.

An investigation disclosed that the top rudder hinge (new type triple design P/N 54030-987) failed. This was followed by structural overload of the tubular spar and separation of the upper section of the rudder. (Refer to the following illustration.) The point of separation was approximately 6 inches below the upper rudder hinge. In accordance with Airworthiness Directive (AD) 79-10-10, a new rudder with a "triple hinge" was installed. The submitter suggested the rudder and the hinges be inspected every 25 hours of operation.

Part total time-857 hours.



CESSNA

Cessna **Aileron Control**
Model A188B **System Defects**
Ag Wagon **2710**

While reviewing service bulletins in conjunction with an annual inspection, several references were found concerning problems with the aileron control system pulleys and cables.

During the inspection, an aileron cable was found with approximately 60 percent of the cable strands broken. The manufacturer recommends these cables be replaced after 500 hours of time in service. The submitter stated the condition of this damaged cable may justify lowering the recommended time change.

Part total time-474 hours.

GRUMMAN

Grumman **Defective Engine**
Model G164A **Operating Indications**
Ag Cat **7713**

This aircraft had a history of engine cylinder failures. These failures ranged from "spark plug to spark plug" cracking, cylinder head and barrel separation, and almost any other failure which could possibly happen.

After much troubleshooting, it was found that the manifold pressure gauge was indicating approximately 2.4 inches low when the engine was not operating. The submitter speculated that an "overboost" condition may be occurring due to the faulty indication. The pilot stated: "Gee the engine sure uses more fuel than the last one I flew."

Apparently, the "overboost" condition overstressed the cylinders and caused them to fail in one manner or another. The maintenance records did not have an entry for maintenance or replacement of the manifold pressure gauge. The submitter recommended that the manifold pressure gauge and tachometer be "bench checked" and calibrated

at least semiannually. This is a problem which pilots may not report and may be difficult to detect.

Part total time-4,488 hours.

AMATEUR, SPORT, AND EXPERIMENTAL AIRCRAFT

BOMBARDIER

Bombardier Model Challenger **Wheel Brake Defect 3242**

While changing a main landing gear tire, several of the "keyways" on the brake assembly (P/N Goodyear 600-85123-61) were found loose and could have been lost.

The rivets used to secure the "keyways" to the brake disk assembly were either loose or missing. The brake lining wear indicator showed the linings were still serviceable. The submitter could not determine a cause for this defect. The reported time in service may be a factor for this failure. It is recommended that the wheel brake assembly be inspected for any defects.

Part total time-4,972 hours.

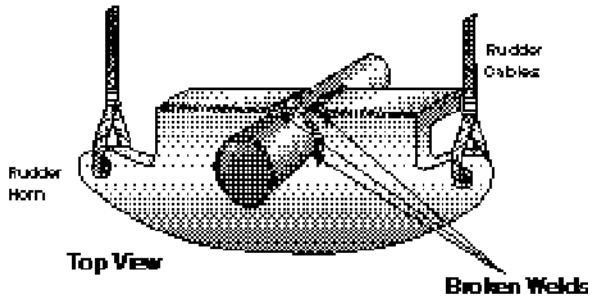
SKYBOLT

Skybolt **Rudder Horn Failure**

During flight, the rudder horn failed and caused a loss of rudder control. The aircraft was safely landed, and the wheel brakes were used for directional control.

An inspection disclosed the welds used to attach the rudder horn to the vertical post had failed. (Refer to the following illustration.) There was only a "tack weld" securing the horn to the rudder vertical tube. The rudder horn assembly had been fabricated by the aircraft builder and had been insufficiently welded. The rudder horn assembly is covered with fabric. After the rudder horn assembly has been covered, it is impossible to inspect. There were corrosion products in some of the broken welds; therefore, the submitter stated the weld failed over a long period.

Part total time-420 hours.



FOLLOWING THE MANUFACTURER'S INSTRUCTIONS

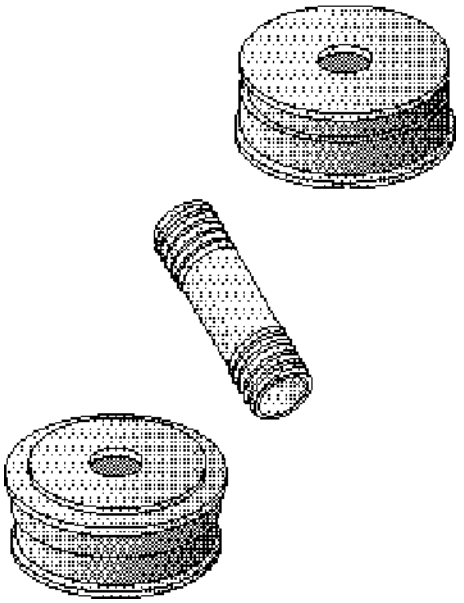
Amateur-Built Aircraft With An O-360 Lycoming Engine

The following problem occurred on an amateur-built aircraft with a O-360 Lycoming engine. The owner complained of excessive vibrations over an extended period of time. In an attempt to smooth the vibration, the aircraft engine was dynamically balanced, the spinner was replaced, and the propeller was removed and static balanced. After a local flight, the same severe vibration was experienced. An uneventful landing was executed, and an indepth inspection was performed.

During this inspection, it was discovered that the four dynafocal mount assemblies had been installed incorrectly. The center load bushing had been "left out," and this allowed the isolation mounts to be incorrectly loaded after the mount bolts were torqued. (Refer to following illustration.) It was determined that the upper left hand isolation mount had unloaded and sheared the metal backing plates from the rubber shock mount. This allowed the engine to move forward and down in the engine cowling. This movement

increased engine vibration to an excessively high amount. The submitter stated that builders should be encouraged to install parts as per the manufacturer's instructions.

Part total time not reported.



PROPELLERS AND POWERPLANTS

TELEDYNE CONTINENTAL

Teledyne Continental Model O-200A — **Engine Failure 8520**

During cruise flight, the engine suddenly failed. All attempts to restart the engine failed, and a safe emergency landing was made in a farm field.

Disassembly and inspection revealed the four bolts used to secure the crankshaft cluster gear were broken. This allowed the cluster gear to rotate independently from the crankshaft. The safety wire used on the four bolts was still intact, and this indicates the bolts had been properly installed. There are indications that one of the broken bolts failed due to "fatigue fracture." The "fracture faces were smeared" on the remaining bolts, and the cause of failure could not be determined. The submitter stated the bolts could have been weakened due to previously experiencing a "sudden stoppage."

Part total time 2,450 hours.

AIRWORTHINESS DIRECTIVES (AD'S)

AD'S ISSUED IN APRIL 1997

97-07-10	deHavilland DHC-6 Series - requires inspecting wing struts.
97-07-11	Jetstream HP137 Mk1, Jetstream 200, Jetstream 3101, and 3201 - requires inspecting the nose landing gear.
97-08-02	Schempp-Hirth K.G. Models Standard-Cirrus, Nimbus-2, Nimbus-2B, Mini-Nimbus HS-7, Mini-Nimbus B, Discus a, and Discus b Sailplanes - requires a load test of elevator control system.
97-08-06	Louis L'Hotellier, S.A., Ball and Swivel Joint Quick Connectors
97-07-07	Bell Models 206L, L-1, L-3, and L-4 helicopters - requires creation of a component history card.
97-07-06	Bell 412 helicopters - requires daily inspection of certain swashplate support assemblies.
97-10-04	Sikorsky helicopters - requires pocket assembly inspection.
97-05-11	AlliedSignal ALF502 and LF407 series turbofan engines - requires inspections of oil system chip detectors.
97-07-05	AlliedSignal T5311, T5313, T5317, and T53 series engines - requires inspection of N2 spur gear nut retainer.

97-05-13	CFM Intl CFM56-5 series turbofan engines - requires rework of air turbine engine starter.
97-06-01	CFM Intl CFM56-5, -5B, and -5C series turbofan engines - requires borescope inspections.
97-08-01	CFM Intl CFM56-3, -3B, and -3C series turbofan engines - requires reduction of low cycle fatigue retirement lives for fan disks.
97-09-01	Pratt & Whitney PW2000 series turbofan engines - requires inspection for cracks in high pressure turbine disks.
97-01-04	Textron Lycoming and Superior Air Parts - requires removal from service of cylinder assemblies.
97-06-16	McCauley Propeller Systems 1A103/TCM Series propellers - requires inspections for cracks in propeller hub.

AIR NOTES

EAA OSHKOSH '97

Once again, the Experimental Aircraft Association (EAA) will host the annual aviation celebration known as Oshkosh '97. This event is known around the world for its excellence, size, number of attendees, number of aircraft, as well as many other statistical categories. This Oshkosh '97 will begin on July 30 and end on August 5. It will be held at the Whittman Regional Airport in Oshkosh, Wisconsin.

The Oshkosh community has always been very gracious in their acceptance of the large number of people who fill their hotels and eating establishments for weeks before and after the airshow and convention.

Officials from EAA, FAA, and virtually everyone having an interest in aviation will be present to answer questions and present information to the public. Throughout the event, information will be provided using forums, seminars, and workshops. Manufacturers, vendors, and other groups will provide the opportunity to view and buy both new and existing aviation products of all kinds. Whatever your aviation interest may be, there will be many items which will grab your attention and possibly spark a new idea.

The staff of this publication will occupy a booth in the FAA hangar to provide handout material and answer questions concerning the Service Difficulty Reporting (SDR) program. The SDR program has many products and benefits which are available to the public. Many of the SDR program products are free, and others have a nominal cost to cover the printing and mailing charges.

We hope to see you!

AIRLINE SUPPLIERS ASSOCIATION CONFERENCE

The Airline Suppliers Association has announced that their annual meeting will be held July 20, 21, and 22 at the Ritz Carlton Hotel in Palm Beach, Florida. The conference and workshop sessions are open to both members and nonmembers.

The meeting will include key note speakers from the National Transportation Safety Board (NTSB), the Federal Aviation Administration (FAA), and leaders from the industry. Some of the topics will include regulatory and legal concerns of transferring aviation parts, the use of military spares on civil aircraft, and discussion of FAA Advisory Circular (AC) 00-56, FAA Voluntary Industry Distributor Accreditation Program. There will be special workshops covering receiving inspection systems, documentation and traceability, and how to write and maintain a quality assurance manual. The conference will be of special value to manufacturers, airlines,

and distributors who are responsible for quality assurance, purchasing, or sales.

Details for the conference can be found by contacting the Airline Suppliers Association. The telephone number is (401) 715-9300. The FAX number is (401) 715-9728. The internet address is "www.airlinesuppliers.com". The Airline Suppliers Association is a trade association representing the suppliers of aviation parts and products.

PAMA CELEBRATES 25TH ANNIVERSARY

This year the Professional Aviation Maintenance Association (PAMA) celebrates its 25th year of promoting professionalism among aviation maintenance technicians.

PAMA was founded in 1972 through the combined support of members of five existing regional maintenance organizations: Westchester Aircraft Maintenance Association (WAMA), Society of Licensed Aircraft Engineers and Technicians (SLAET), Professional Aviation Mechanics Association (PAMA), Ohio Aircraft Technicians Society (OATS), and the Michigan Aircraft Maintenance Association (MAMA). The newly created PAMA and its local chapters established a mandate to better support and represent the needs of the aircraft maintenance technician worldwide. Dedicated industry professionals volunteered their time to set forth PAMA's goal to assist the individual technician regardless of level, background, or affiliation. A temporary board of directors was appointed, followed by the first annual symposium on August 19, 1972, in Pittsburgh, Pennsylvania.

For the past 25 years, PAMA has given voice to more than 200,000 FAA certified Aviation Maintenance Technicians and Repairmen by interacting with other aviation-related organizations on issues concerning the aviation community.

PAMA's president, Stan Mackiewicz stated: "We recognize and honor the individual who had the vision and tenacity to build the framework of the association that exists today. The national organization has always served as a central point for information, communication, coordination, and assistance to the chapters and individual members. With over 40 chapters worldwide and over 4,000 members, the organization is prepared to support the Aviation Maintenance Technician for the next 25 years."

PAMA is a professional organization which features education, information, and representation for aviation maintenance technicians and the industry they serve. PAMA is nonprofit, nonpartisan, nonsectarian, and nonunion.

ALERTS ON LINE

We have received several requests to make the information contained in AC 43-16, General Aviation Airworthiness Alerts, available electronically. Therefore, this publication is now available through the FedWorld Bulletin Board System (BBS), via the Internet.

You may directly access the FedWorld BBS at telephone number (703) 321-3339. To access this publication through the Internet, use the following address.

http://www.fedworld.gov/ftp.htm

This will open the "FedWorld File Transfer Protocol Search And Retrieve Service" screen. Page down to the heading "Federal Aviation Administration" and select "FAA-ASI". The file names will begin with "ALT", followed by three characters for the month, followed by two digits for the year (e.g. "ALTJUN96.TXT"). The extension "TXT" indicates the file is viewable on the screen and also available to download.

Beginning July 1996, we are using the Adobe Acrobat software program format to upload this monthly publication. This change is necessary to include the illustrations which are associated with various articles. The file names will still begin with "ALT", followed by three characters for the month, followed by two digits for the year; however, the extension will be "PDF" (e.g. "ALTJUL96.PDF"). The extension "PDF" indicates it will be necessary to download the files for viewing. The Adobe Acrobat Viewer is available for download from the Internet (free of charge) and will allow the files to be read.

You may still access the "TXT" extension for issues of this publication prior to July 1996.

Also, available at this address are the Service Difficulty Reports which may be of interest.

The Regulatory Support Division (AFS-600) has established a "HomePage" on the Internet, through which the same information is available. The address for the AFS-600 "HomePage" is:

http://www.mmac.jccbi.gov/afs/afs600

Also, this address has a large quantity of other information available. There are "hot buttons" to take you to other locations and sites where FAA Flight Standards Service information is available. If you have any questions, our "E-mail" address follows.

Other requests have been received indicating a need to make the staff of this publication more available to our readers. To provide greater and more flexible access for you to offer information and ask questions, you may contact us by using any of the following methods.

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Mailing Address:
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P.O. Box 25082
Oklahoma City, OK 73125-5029

We hope this will allow you to contact us by a means which will be convenient and save some of your time. We welcome the submission of aircraft maintenance information via any form or format. This publication provides an opportunity for you to inform the general aviation community of the problems you have encountered. The Service Difficulty Reporting (SDR) program also brings the problems to the attention of those who are able to resolve the problems. Your participation in the SDR program is vital so accurate maintenance information is available to the general aviation community.

FAA FORM 8010-4, MALFUNCTION OR DEFECT REPORT

For your convenience, FAA Form 8010-4, Malfunction or Defect Report, will be printed in every issue of this publication.

You may complete the form, fold, staple, and return it to the address printed on the form. (No postage is required.)

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ATA Code
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Enter pertinent data	MANUFACTURER	MODEL/SERIES	SERIAL NUMBER
2. AIRCRAFT			
3. POWERPLANT			
4. PROPELLER			

5. SPECIFIC PART (*of component*) CAUSING TROUBLE

Part Name	MFG. Model or Part No.	Serial No.	Part/Defect Location

6. APPLIANCE/COMPONENT (*Assembly that includes part*)

Comp/Appl Name	Manufacturer	Model or Part No.	Serial Number

Part TT	Part TSO	Part Condition	7. Date Sub.

8. Comments (*Describe the malfunction or defect and the circumstances under which it occurred. State probable cause and recommendations to prevent recurrence.*)

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Check a box below, if this report is related to an aircraft

☐ Accident; Date_____ ☐ Incident; Date_____

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